

The Newborn Screening Program in I.R.Iran



BY:

Shahin Yarahmadi (MD, PhD)



(PAST)

- Previous Researches
 - Universities
 - IEAE
- 5years gap
- Designed in 2003
- NBS has been designed based on the Primary Health Care (PHC) Network in Iran.
- NBS includes a few phases and in each phase, one disease will be added to the program.

Introduction:

- Congenital Hypothyroidism (CH) has been selected to be screened in the first phase.
- Cost-benefit ratio = 1 to 15
- PKU, G6PD, Galactosemia, and CAH will be added in further phases.
- Piloted in 2004
- Implemented in the Health System In Oct 2005.

Objectives:

- Screening all neonates for CH
 - AFGHAN
 - Arakian
- Case finding
- Achieving good metabolic control to prevent complications
- Providing better quality of life

Strategies:

- A feasible action plan
- A precise screening test
- An early recall
- Low false positive
- No false negative
- A coverage of more than 90%
- Education
 - Pediatrics
 - Gynecologists
 - GPs
 - Health care providers
 - Lab staff
 - Parents
 - Public

Strategies...

- Early treatment and sustain good metabolic control
- Follow-up team
- Performing NBS with other national programs
 - Well baby care
 - Breastfeeding
- Media
- Scientific Committees

Methods & Materials:

- Sampling
 - » Health care houses in Rural
 - » Health care Centers in Urban
 - Home visit for remote areas
- Heel prick
- 3 – 5 days of life (72 hours after birth)
- Guthrie card (S&S 903)
- By Express Post (within 72 hours)
- TSH (within 3 days)
- ELISA
- TSH ≤ 5 mIU/L is considered NEGATIVE.
- One Screening Lab per each province

Methods & Materials...

- Recall via Public Health Network (urgently)
- Confirmation Tests (T4 or Free T4, T3RU, and TSH) in the Selected Lab in each city:
 - RIA
 - Elisa
- Diagnosis
- Replacement therapy based on the national guideline by the most accessible physician
- Focal Point
 - Endocrinologist or Pediatric in urban areas
 - GPs in rural areas
- Family Education
- Follow-up group
- Not compulsory by law in all provinces

Cost

- Cost= 2,000,000 \$/year
- Government
- Parents

The screening test (mu/L)	Situation	Action
TSH ≤ 5	Normal	- No recall
$5 < \text{TSH} \leq 10$	Suspicious	- Recall at the age of 4 weeks. - Measure T4, TSH, and T3RU - Receive the results. - Initiate treatment in diagnosed cases based on guideline.
$10.1 < \text{TSH} \leq 19.9$	Suspicious	- Recall at the age of 2-3 weeks.- Measure T4, TSH, and T3RU. -- Receive the results.- Initiate treatment in diagnosed cases with hypothyroidism based on guideline.
TSH ≥ 20	Suspicious	- Recall immediately. - Measure T4, TSH, and T3RU. - Start treatment based on guideline. - Receive the results and make decision based on it: (Continue the medication if the case is hypothyroid or Discontinue the medication if the case is euthyroid)

PRESENT Results:

- in 27 provinces out of 30
- The Coverage rate in provinces (17-90%).
- The recall rate was 0.2%-5%
- 234000 newborns have been screened and 510 hypothyroid newborns were diagnosed
- both transient and permanent cases

Results...

- Mean of age at screening was 6 ± 2 days.
- Treatment has been initiated for 85 % of diagnosed cases before 28 days of life.

Conclusion:

- The NBS is a well design program.
- It is a feasible and an effective activity for achieving better health for children in Iran.
- There is a exist infrastructure for screening other medical disorders in newborns.

FUTURE

- High Incidence
 - Environmental
 - Iodine deficiency
 - Technical Error
 - Genetics (familial Marriage)
- Transient Hypothyroidism
- Adding other Metabolic Diseases to NBS
- To develop a Registry system

SWOT:

- Strength
 - Well designed program
 - The Primary Health Care (PHC)
 - Universities
 - Dedicated staff
 - Team working
- Weakness
 - Not supported by insurance companies
- Opportunities
 - Family Medicine
 - Rural Health Assurance
- Threats
 - Financial

And Still a Long Way to Go...



Thank you